

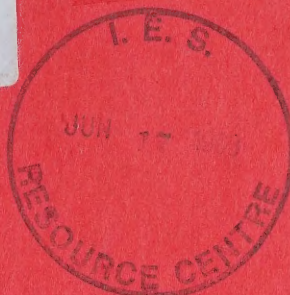
CA2ONEA 93E03

Ontario. Environmental Assessment Board.

EP-92-03

TOWNSHIP OF FARADAY LANDFILL. DECISION AND REASON FOR
DECISION... 1993.

CA2ONEA 93E03



ENVIRONMENTAL ASSESSMENT BOARD

EP-92-03

TOWNSHIP OF FARADAY LANDFILL

DECISION AND REASONS FOR DECISION

IN THE MATTER OF the *Environmental Protection Act*, R.S.O. 1990, c. E-19, as amended, since the applicant is seeking an amendment to its Provisional Certificate of Approval for the Township of Faraday Waste Disposal Site A361504.

- and -

IN THE MATTER OF the *Intervenor Funding Project Act*, R.S.O. 1990, c. I-13, as extended by Proclamation by the Lieutenant Governor dated March 11, 1992 which allows intervenors to seek funding for their participation in the hearing.

BEFORE: Elaine Tracey - Chair
Alan Levy - Member

DATED at TORONTO this 9TH day of JUNE, 1993

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IN THE MATTER OF the *Intervenor Funding Project Act*, R.S.O. 1990, c. I-13, as extended by Proclamation by the Lieutenant Governor dated March 11, 1992 which allows intervenors to seek funding for their participation in the hearing.

APPEARANCES

Wayne Fairbrother - for Proponent

Frank Mencarelli - Ministry of Environment and Energy

REASONS FOR DECISION

1. BACKGROUND

The Township of Faraday owns 44 hectares of land in the Township on part of Lots 10 and 11, Concession A, in the County of Hastings. Approximately 3.6 hectares is used for waste disposal.

The landfill site is located 2 kilometres west of the intersection of Monck Road and Highway 28 and the Village of Bancroft village limits. The site has been jointly operated by the Township of Faraday and the Village of Bancroft since 1972.

After the Ministry of Environment and Energy ("the Ministry") reviewed the Conditions of Approval in 1992 it was determined that the authority under which Bancroft was utilizing the site was likely invalid because the Certificate was issued to the Township without inclusion of Bancroft in the service area.

This resulted in an Emergency Certificate of Approval. The Township has and continues to operate under this Certificate. There is no application to expand the service area, but to regularize the situation under which the site is operated.

The Township of Faraday is also seeking approval for a Revised Operations and Closure Plan which entails increasing the waste mound vertically to a maximum elevation of 405 metres above sea level. The revised operations and closure plan will increase the capacity of the site by 80,600 cubic metres. The parties have advised that the total area to be filled has changed from 4.0 ha to 3.6 ha, as the land containing the Upper Pond area does not have to be included in the licensed area. In addition, the total area of the site has been increased from 35.5 ha to 44 ha to reflect the purchase by the Township of additional land located south of the South Pond.

A leachate collection system is partially installed at the site. The proposal before the Board provided a more detailed daily operations plan, closure plan and the completion of the leachate collection system.

On Monday, November 2, 1992 at the Preliminary Hearing Mr. Fairbrother, for the proponent, stated that "a few technical points require clarification and the process of attempting to clarify those points and address those is ongoing" with the Ministry.

The focus prior to the main hearing was to develop appropriate Conditions of Approval.

A Public Meeting was held in May, 1992. The meeting was attended by municipal council members from the Village of Bancroft and the Township of Faraday, and technical consultants as well as legal counsel for the proponent. An interested council member from another municipality attended but did not raise any concerns. A landowner in the vicinity of the site asked questions but identified no concerns with the site.

The hearing commenced on Monday, March 29, 1993 and was completed on Wednesday, March 31, 1993. The Board scheduled a Public Evening Session for March 29 which had been advertised in the local press. No members of the public attended this session.

A site visit was conducted Tuesday morning, March 30th. This enabled the Board to have a better understanding of the location of landfilling and the adjacent property characteristics.

2. SITE CHARACTERIZATION

Niall Carney, Director of Planning with the County of Hastings, appeared as a witness for the proponent. Mr. Carney has provided planning service to the Township. In his evidence

Mr. Carney stated that the population of the Township in 1991 was 1,495 and in the Village it was 2,383.

The landfill site is located in a remote and secure area. Therefore nuisance factors have not been a problem. To the east of the site there are four houses on the north side of Monck Road and eight on the south side of Monck Road. There is a gravel pit immediately east of the northeast corner of the land owned by the proponent. Another gravel pit is located immediately north of the site and another pit northeast of the site. The site is compatible with the surrounding neighbourhood.

The site is zoned M/exemption, rural designation, in the Official Plan for the County permitting its use for waste disposal and leachate collection.

3. RECYCLING

The Board heard evidence from Elizabeth Mackey, Clerk of the Township and Dean Patterson, Clerk of the Village.

Mr. Patterson testified it was impossible for the Village to implement a recycling program on its own due to the cost factor. There were meetings with the Township and a number of northern municipalities were approached to participate in a meeting to discuss the possibility of regionalizing a waste management system and getting involved in recycling. After several meetings, it was clear that a number of the municipalities did not wish to participate. The Township and the Village made application to enter into the Centre South Hastings Waste Management Program which has a major recycling program. The two municipalities were able to participate commencing mid-1991.

In August, 1991 the Blue Box program was initiated in Bancroft.

The Blue Box 2000 program is now in place. This is a pilot project sponsored by the Centre and South Hastings Waste Management Program, Quinte Regional Recycling, the Ministry and participating municipalities.

The program provides for the collection and recycling of rigid and styrofoam plastic containers, aluminum trays, clean rags and textiles, clean plastic bags, newspapers and

magazines, boxboard, corrugated cardboard and household fine paper. All of the recyclables are picked up by a contractor and taken to a recycling facility in Trenton, Ontario.

Since implementation of this program the Village has diverted 10.5 tons of waste from the landfill.

The Village is a commercial centre serving a population of approximately 20,000 people. The production of cardboard from the commercial sector going to landfill is significant. Therefore, the Village is embarking on a program this year to build a structure with a baler for cardboard and a forklift to transport the baled cardboard to a waiting trailer. When required, this will be transported to markets in Toronto in conjunction with Quinte Recycling. This project is expected to be underway by late spring or early summer. Mr. Patterson stated that the response from the local business community has been excellent. Sister municipalities will be invited to participate and bring their cardboard to the depot. The commercial outlets within the Village itself will have pick-up.

4. RECYCLING IN TOWNSHIP

The Township is involved with Centre South Hastings as well. The Township, being a rural area, cannot afford door-to-door pick-up.

The Township applied for and received a Certificate of Approval for a transfer station to be erected at the site. The local residents are responsible for bringing their recyclables to the site. Bins are available in the depot for the different categories of recyclables. The public was educated through flyers explaining the program. These were delivered through the schools and sent out to the ratepayers with their tax notices.

From June 1992 until the end of February 1993, 48.79 tons of recyclables had been collected.

The Board is impressed with the recycling program in place within the Township and the Village. The variety of material recycled is quite extensive and far more than for Metro Toronto. It is obvious the councils and residents are sincere in their waste reduction efforts, and they are to be commended.

It is interesting to note that the used clothing brought to the depot is sorted and any clothing that can be worn is baled and sent to Third World Countries.

The Township and the Village jointly purchased 300 home composters and sold them to the residents at a reduced rate. The Township later purchased an additional 90 for their residents. Many of the local residents have their own gardens and had started composting prior to this.

5. TIRES

Tires were removed from the site in 1991 and again in 1992. In 1991, 2,447 tires were removed at a cost averaging \$1.77 per tire. In 1992, 1,130 tires were removed costing the Township approximately \$1.92 per tire.

Tires are now segregated at the site in a 75 cubic metre containment area. These are removed when the area accumulates approximately 1,200 tires.

In July 1991 a disposal fee of \$5.00 per tire was implemented.

6. SCRAP METAL

Scrap metal is segregated at the site. A local contracting firm has been collecting the scrap metal and appliances since 1991.

The Board questioned if freon was removed from white goods prior to entering the landfill site. It was indicated by the Site Supervisor that no white goods were received if the freon had not been removed.

It is the opinion of the Board that there should be a more extensive program for white goods entering the site, including a freon removal machine so that all fridges and freezers can be accepted without any danger of freon leakage while these goods are awaiting removal from the site.

7. TIPPING FEES

Most landfilling costs are now dealt with through mill rates by both the Village and the Township. The cost sharing is 50% for each municipality.

Tipping fees were implemented in 1988 for certain things. Since 1988 and until the end of 1992, \$17,575.00 was collected in tipping fees.

(a)	Tires		\$5.00 per tire
(b)	White Goods		\$5.00 per appliance
(c)	Construction debris:		
	(i)	1/2 ton truck or car and trailer	\$30.00
	(ii)	1/2 ton truck complete with trailer, tandem or single axle	
		- sorted	\$100.00
		- unsorted	\$300.00
	(iii)	Tri-axle or other	
		- sorted	\$200.00
		- unsorted	\$450.00
d)	Asbestos waste - tri-axle/tandem (required as result of school renovation in 1992)		\$1,000.00 per load \$500.00 per part load (50% or less)
		- Cube Van	\$500.00 per load

Mr. Patterson said there has been no thought given to other tipping fees because "costs included in mill rate are quite substantial for both pick up and disposal."

The Board urges both municipalities to consider implementing tipping fees for all waste entering the site. We believe that a weigh scale would be required to accurately assess the amount of waste entering the site if tipping fees are initiated. The fees would be a source of revenue to offset some or all of the costs of operating the landfill site. The mill rate itself would not have to be increased to cover additional landfill costs, and costs would be properly recoverable. Tipping fees generally encourage further waste diversion by the user as well.

8. HOUSEHOLD HAZARDOUS WASTE

There is no proper facility to dispose of household hazardous wastes.

Recently the Central South Hastings Waste Management Program sponsored a hazardous waste depot in Belleville. The depot has been approved by the Ministry and is expected to open in late April, 1993.

The Village and the Township will be able to implement a program to dispose of their hazardous wastes there.

The Board is confident this program will be implemented given the past record of both municipalities in their recycling efforts.

9. PHYSICAL SETTING

The site is dominated by precambrian bedrock within the Canadian Shield. This type of terrain is characterized by topographical highs which do not have much cover material.

The landfill is located in a "bedrock bowl" which is tipped slightly westward. The soil cover in this area is thin and the underlying bedrock is quite impermeable with an estimated hydraulic conductivity of 10^{-7} cm/s.

Sandy soil is used as cover material due to the lack of clay material in the area. Precipitation infiltrates readily into this material. Therefore, there is very little surface run off.

The leachate generated originally followed the natural drainage patterns toward the small gully west of the fill area.

In the mid 1970s and 1980s several berms were constructed to the west and south of the operating area to prevent off-site migration of leachate.

The creation of these berms resulted in the formation of the Upper Pond (west of the operating area) and the South Pond (south of the operating area). A drainage pipe was installed to convey water via gravity from the South Pond to the Upper Pond.

Between Monck Road and the Upper Pond, the Lower Ponds were established to reduce the hydraulic pressure on the Upper Pond's berms. An asphalt-lined ditch was created to transfer water from the Upper Ponds to the Lower Ponds. A culvert in the northwest corner of the Upper Pond allowed the water to gravity feed to the Lower Ponds.

Leachate continued to migrate through or beneath the berms west of the Upper Pond and to the south of the South Pond. A design was proposed for the installation of a leachate collection and storage system. A collector pipe/cut off berm at the west edge of the waste area was also proposed. This was to intercept leachate and convey it to lined storage ponds that would be constructed in the location of the Lower Ponds.

The leachate collection and storage system design was approved by the Ministry and the lined storage ponds were constructed in the summer of 1991. The pattern of surface and groundwater flow is currently as follows:

1. The topography of the site and the presence of a surface water diversion berm east of the operating area means that the vast majority of surface water entering the site is from rainfall or snow melt. No streams run through or near the site.
2. Little runoff occurs from the operating area during most times of the year due to the permeable nature of the cover material and waste.
3. The major component of water that infiltrates into the waste (leachate) travels westward to the Upper Pond. Some flow also occurs southwest to the South Pond.
4. Drainage occurs, via gravity, from the South Pond to the Upper Pond. The Upper Pond liquid is pumped to the lined storage ponds. Pumper trucks haul the liquid from the ponds to the Bancroft Water Pollution Control Plant (WPCP) for treatment.
5. Some leachate migration continues west from the Upper Pond and south from the South Pond. The installation of the engineered collector pipe/cut-off berm system has been designed to alleviate this situation.

10. BEDROCK GEOLOGY

Bedrock within the area consists of Precambrian granites, syenite schists and marbles. Bedrock outcrops occur northeast of the South Pond (TW5), in the vicinity of TW21, south of the Upper Pond and north of the Upper Pond.

The bedrock is relatively unweathered and exhibits an average fracture spacing of 1.5 metres.

11. HYDROGEOLOGY

The hydrogeology panel of Ian MacDonald and Byron O'Connor from Water and Earth Sciences Associates (WESA), began on day 1 and continued on day 2 of the hearing.

Mr. MacDonald indicated that the "average linear velocity" of the groundwater throughout the operating area of the site is approximately 250 m/yr. (Exhibit 15). He was referring to an unconfined aquifer of native soil and fill beneath the operating area and the groundwater flow in this aquifer. The velocity is calculated by taking into account the hydraulic conductivity of the sand and gravel in the operating area, its porosity, and the hydraulic gradient.

A bedrock well was installed in the northwest corner of the west berm to determine if there was a hydraulic connection between the overburden and the bedrock, and to provide information on the hydraulic characteristics of the bedrock. The analysis of the data indicated a "bulk hydraulic conductivity" of 8×10^{-7} cm/sec for bedrock in this area. When asked how this translates into velocity, Mr. MacDonald indicated that he could not answer without taking into account porosity and hydraulic gradient. The hydraulic conductivity he referred to is the equivalent of 25.6 cm/yr. In the south pond area, he calculated the bulk hydraulic conductivity to be 3×10^{-1} cm/sec, which is the equivalent of 94.5 m/yr. His Witness Statement, page 6, indicates that the major groundwater flow pathway is likely along the overburden/bedrock surface.

When the lower ponds were present, there was some infiltration from these ponds into the groundwater system. A portion flowed to the southwest while the remainder flowed to the northeast. Groundwater flow velocity in the Monck Road area was calculated at 4×10^{-8} cm/sec for the silt unit (1.3 cm/yr.) and 8×10^{-4} cm/sec for the sand and gravel unit (252 m/yr). Byron O'Connor testified that he did two different types of water balance calculations to determine the amount of leachate produced by the site. With weekly cover, and in steady-state conditions, he estimates leachate generation at 20,500 m³/yr. After closure, with a clay cap, this will drop to 7,500 m³/yr. In 1992, 29,000 m³ of leachate was hauled to the Bancroft WPCP. In 1991, the figure was 35,000 m³. These higher figures are as a result of the re-circulation of leachate which occurred when the upper pond was drained.

Mr. MacDonald testified that the MOEE Reasonable Used Guidelines (RUG) were met at the southern boundary of the site because of the ravine, which channels groundwater in a westerly direction. The bottom of the ravine is located at the new property line, which happens to be a groundwater divide. There is flow to the west along the bottom of the ravine. The leachate plume has not yet reached monitor TW44 which is located in the gully west of the west berm and east of Derry Lake. Mr. O'Connor indicated that if the plume was going to have reached this monitor, it would have done so by now. The berms have obviously had some success in reducing the amount of leachate migration.

Although there is a collector pipe installed in the westerly berm (the more westerly berm was built in 1986) which is of some considerable assistance in preventing leachate migration, it is not adequate as a leachate collection system. For that, the new plan is necessary. This is described in Exhibit 33, which is the March, 1993 Gartner Lee Report. This document constitutes a consensus between the proponent and the Director's advisers. Weekly cover, rather than daily cover, has been agreed to. They have also agreed to compacted final cover which will have a hydraulic conductivity of 10^{-6} cm/sec (32 cm/yr.).

Mr. O'Connor testified there will be additional fill capacity of 80,600 m³, but that assumes the existing situation where only limited compaction is achieved. We do not have figures for the potential capacity should an increase in compaction occur. Mr. Fairbrother indicated that the municipalities are budgeting for a better compactor in the future.

With respect to compaction of waste, the Township has in its budget \$130,000 for a compactor machine, which was suggested by WESA for this landfill. It is in the 1993 budget for the Township, although we were told that financing is a real difficulty.

The Board is aware that it has no jurisdiction to order the province to provide funding for such facilities.

Mark Sungaila and Paul Murray testified from Gartner Lee. They indicated that the LCSS (leachate collection and storage system) will effect a decrease in the groundwater level within the site, and prevent migration of leachate to the west and to the south. The two lined storage ponds provide a capacity of 8,700,000 litres of leachate.

The evidence included an estimate of site life based on population and waste generation rates. The range was from a low of 10.5 years to 29 years (Exhibit 18). The best estimate,

prepared by WESA, is 17 years assuming a population growth of 1% per year, waste diversion of 25% by the year 2000, and a waste generation rate of 1.09 kg/capita/day.

On day three of the hearing, March 31, the proposed contingency plan was filed (Exhibit 40) together with proposed Conditions of Approval (Exhibit 39) agreed upon by both parties. A revised version of Exhibit 40 was submitted after the hearing, and is reproduced as Appendix II.

The Ministry experts were present at the hearing and the Board is mindful of the number of meetings held between them and the proponent's experts prior to and during the hearing, in order to come to an agreement with respect to the Conditions of Approval. Mr. Mencarelli stated on the final hearing day:

As a result of all of the ongoing negotiations that have occurred over the last three days, the Director is satisfied that any and all of the outstanding issues that have been raised through the earlier correspondence going back and forth between the parties, and in fact over a number of years, have been addressed either in direct evidence or will be addressed in the event that the Board approves the application and approves the proposed Conditions of Approval.

This has been at least a novel approach from my point of view, and perhaps in any hearing that I have heard of, where in fact no direct evidence has been called by the Director.

I felt that it was not necessary to call witnesses in order for those witnesses merely to reiterate that they have in fact reviewed all the evidence and they are satisfied.

That has been done in the past. I think that we are getting to a stage not only through added requirements of the Board to do more and more work, but the fact is the more people you put on the stand, the longer these hearings become.

The Board appreciates the work carried out by the proponent's witnesses and the Ministry witnesses to resolve the issues. Parties can and should work together outside the hearing to help shorten the length of these hearings.

The Board approves the amendment of Certificate of Approval #A361504 for the Township of Faraday to include the Village of Bancroft in the service area with conditions as set out in Appendix I. The Board also approves the Design and Operation Report.

Mrs. Mackey in her evidence referred to the Township being forced to neglect much-needed road work and equipment repairs because of the landfill:

Landfill is the biggest drain on the pursestrings of the Township.

The Board recognizes these difficult economic times and the financial burden placed on smaller cash-strapped municipalities to carry out these necessary projects. All funding, whether it be provincial or municipal, is generated by the taxpayers of Ontario, but the contribution expected by smaller municipalities may be relatively more onerous. Perhaps it is fair to say that smaller rural municipalities should be given some priority when grants are being considered for the betterment of the environmental concerns and interests of the province. Conditions of Approval are attached at Appendix I.

12. DOCUMENTATION

Schedule A to Appendix I contains a list of important documentation and a statement of the reasons for the Conditions of Approval. The contents of Schedule A have been drafted by the parties and will be attached to the Certificate of Approval to be issued to the proponent by the Director.

The Contingency Plan, listed as document 5 in Schedule A to Appendix I, is attached at Appendix II. The location map for the landfill site, which is Figure 1 from a WESA report, is attached as Appendix III.

DECISION

1. The application by the Corporation of the Township of Faraday for approval of the continued use of its Monck Road Landfill Site, to include domestic, commercial and non-hazardous solid industrial waste and on a contingency basis only, dewatered, digested sewage sludge from the Village of Bancroft, is hereby granted subject to the Conditions of Approval, attached hereto as Appendix I.
2. The total area to be filled is changed to 3.6 ha from 4 ha. The total area of the site is changed from 35.5 ha to 44 ha.

3. The service area for the site shall include the Township of Faraday and the Village of Bancroft.
4. The increase in site capacity, of 80,600 cubic metres of fill, as described in the Revised Operations and Closure Plan, is approved.
5. The Board will hear from the parties on the issue of costs, if requested, at a date, time and place to be scheduled by the Board Secretary.

DATED at TORONTO this 9TH day of JUNE, 1993.

"Elaine Tracey"

Elaine Tracey, Chair

"Alan Levy"

Alan Levy, Member

Appendix I

TOWNSHIP OF FARADAY LANDFILL

Conditions of Approval

1. For the purpose of this Provisional Certificate of Approval;
 - 1.1 "Director" means one or more of the persons who from time to time are so designated for the purpose of Section 30 of the *Environmental Protection Act*;
 - 1.2 "Regional Director" means the Director, Southeastern Region, Ontario Ministry of Environment and Energy;
 - 1.3 "District Manager" means the District Manager, Kingston District Abatement Section, Southeastern Region;
 - 1.4 Township means the Corporation of the Township of Faraday;
 - 1.5 "Village" means the Corporation of the Village of Bancroft;
 - 1.6 "EPA" means the *Environmental Protection Act*;
 - 1.7 "Surface Water Unit" means the surface water unit of Southeastern Region's Technical Assessment Section.
2. The terms and conditions set out in this Provisional Certificate of Approval replace all terms and conditions set out in any Certificate No. A361504 issued previous to the date of this Provisional Certificate of Approval.
3. This Provisional Certificate of Approval shall be registered on the title to the lands comprising the waste disposal site. No operation shall be carried out at the site after sixty days from this condition becoming enforceable unless this certificate including the reasons for this condition has been registered by the applicant as an instrument to the appropriate Land Registry Office against title to the site and a duplicate registered copy thereof returned by the applicant to the Director, Approvals Branch, Ministry of Environment and Energy.
4. This Provisional Certificate of Approval restricts operations of this landfill as follows:
 - 4.1 No landfilling may take place beyond the 3.6 hectare fill area as delineated on Figure No. 9 dated February 24, 1993, listed as item No. 4 in Schedule A of this Provisional Certificate of Approval;

- 4.2 Only wastes emanating from within the geographical boundaries of the Township of Faraday and the Village of Bancroft may be received for disposal in the landfill site;
 - 4.3 The waste types to be received at the landfill site for disposal are restricted to domestic, commercial, and non-hazardous solid industrial waste, and to processed organic waste restricted to the dewatered digested sewage sludge from the Village of Bancroft Water Pollution Control Plant on a contingency basis only;
 - 4.4 The refuse face shall be covered weekly with 150 mm of soil;
 - 4.5 Upon closure of the landfiling operations no waste shall be deposited in the landfill site. Final grading and capping of the area shall be completed within six months from the closure date. The operating authority shall maintain the integrity of the interim cover materials pending the application of final cap and vegetative cover.
5. The Township shall retain the services of a competent and qualified consulting firm, experienced in the fields of both hydrogeologic and hydrologic monitoring and interpretation, to prepare an annual report on the results of ground and surface water monitoring at this waste disposal site together with a detailed interpretation of those results. The annual report shall provide monthly analyses of the final effluent from the Bancroft Water Pollution Control Plant and identify impacts and/or emerging water quality trends in the York River. Metal concentrations of the sludge will be compared to aerobic sludge metal criteria in the Guidelines for Sewage Sludge Utilization on Agricultural Lands (Table 2, October, 1992). Furthermore, the annual report, at a minimum, should include:
- a) a record of the weekly volumes of leachate hauled to the Water Pollution Control Plant;
 - b) a quarterly record of the leachate quantities pumped to the storage ponds;
 - c) a quarterly analysis of leachate quantities pumped to and from the storage ponds for the purpose of determining leakage loss, if any, from the storage ponds;
 - d) results from an annual exfiltration test on the storage ponds;
 - e) a summary and analysis of all hydraulic and geochemical monitoring results;
 - f) a record of any repair work that was performed;
 - g) recommendations for repair work and revisions to monitoring and maintenance schedules for the Leachate Collection and Storage System;
 - h) any emergency overflows from the storage ponds will be noted; and

- i) an account of the number of days on which leachate could not be hauled to the Water Pollution Control Plant due to hydraulic overloading of the plant.

The annual report shall be submitted to the Director and the District Manager not later than ninety days following the end of the calendar year on which the report is prepared.

- 6. The annual report shall include all the results of the groundwater and surface water monitoring programs including the historical results. The monitoring program shall include but not be limited to:

- 6.1 The following monitoring wells, leachate collection and storage system sampling location, and all newly installed wells as outlined in this Provisional Certificate of Approval shall be sampled for water quality two times per year in April/May and October/November:

MP1, MP2, TS1, TW20, TW23, TW24, TW25, TW26, TW30, TW31, TW32, TW33, TW34, TW35, TW37, TW38, TW40, TW41, TW42, TW43, TW44, and the Leachate Collection and Storage System at the access point which is as close to the landfill source as is possible, the location of which is to be determined in consultation with the Director.

In the event that monitoring well TW20 becomes inoperative, it shall be replaced by a monitoring well which will be advanced into the refuse at a location to be determined in consultation with the Director.

- 6.2 Collected water quality samples should be analyzed for all of the parameters (monocyclic aromatic hydrocarbons will be the only organic parameters analyzed) contained in Table A and Table B of the Ministry of Environment and Energy Bulletin concerning Ontario's Drinking Water Objectives which is dated summer 1992. In addition, the samples should include an ion balance, Total Kjeldahl Nitrogen, and ammonia analyses for the purpose of calculating organic nitrogen; field pH; and field specific conductance. The samples for metals analysis shall be filtered in the field. In consultation with the Director, the list of parameters may be altered for subsequent sampling events. Furthermore, during the April/May, 1993 sampling event the samples collected from TW20 and TW40 shall be analyzed for all of the parameters contained in Table A and Table B of the Ministry of Environment and Energy Bulletin concerning Ontario's Drinking Water Objectives which is dated summer 1992.

- 6.3 Surface water sampling shall be conducted semi-annually at the following locations:

Upper Pond (until it is infilled), Derry Lake, South Pond, Drain, SW1,

SW2, SW3, Background, Ravine;

Sample points SW1, SW2, and SW3 will be sampled one additional time per year after a significant storm event;

The samples will be analyzed for the following parameters:

Field pH, field specific conductivity, field temperature, calcium, sodium, hardness, chloride, iron, manganese, ammonia, BOD, COD phenols, and total phosphorous.

- 6.4 A monthly grab sample taken from the leachate haulage truck immediately after it has been loaded shall be analyzed for basic water pollution control plant operational chemistry as determined from time to time in consultation with the Director. Every three months, the monthly grab sample from the leachate haulage truck shall also be analyzed for a suite of heavy metals to be determined in consultation with the Director. After one year, the frequency of the grab sample analyses may be reduced in consultation with the Director.
- 6.5 Landfill gas monitoring shall be carried out at the landfill site during December/January at the gas monitor and any monitors with inlets which are partially or totally located above the groundwater table.
- 6.6 Groundwater elevation measurements shall be carried out at the landfill site at the monitors listed in condition 6.1 and all other functional monitors, as well as water level measurements at Derry Lake, the Upper Pond, the South Pond, the Storage Ponds located near Monck Road, and the Road Pond prior to each water quality sampling session.
- 6.7 The results of the groundwater and surface water monitoring program for the water level elevations and for the water quality values shall be presented in table form, as well as in graph form.
7. The trigger mechanism for the design and/or implementation of the Contingency Plan as outlined in item 5 of Schedule A shall be used at this waste disposal site.
8. Proper erosion control measures will be used during the period of the construction of the Leachate Collection and Storage System and will be determined in consultation with the Surface Water Unit.
9. The Township shall use a hauler approved under the EPA to maintain haulage of the leachate to the Water Pollution Control Plant located in the Village of Bancroft and shall maintain its Generator Registration Number. Other water pollution control plants may be used with the prior approval of the Regional Director.

10. A transfer station at the landfill site is used as part of the Municipal Waste Recycle Program and that transfer station shall be operated as indicated in the August, 1991 report, "Application for a Certificate of Approval for a Waste Disposal (Transfer) Site -Township of Faraday - Waste Disposal Site", as prepared by Water and Earth Science Associates Ltd. which is listed in Schedule A as item 6; the application completed and signed by Mrs. Elizabeth Mackey dated August 22, 1991, which is listed in Schedule A as item 7; and the letter from Faraday Township to Mr. John Tooley of the Ministry of the Environment dated September 23, 1991, which is listed in Schedule A as item 8.
11. If it is proposed to use the transfer station for other recycling operations an application to the Director under Part V, EPA is required.
12. The Township of Faraday shall ensure that adequately trained personnel are on duty at all times during the operation of the transfer station and to maintain separate records for the transfer station, on file, in a secure manner for a period of not less than two years.
13. The operation of the transfer station shall continue after waste is no longer received at the site or the site is closed or both. If the Director revokes this Certificate of Approval the operation of the transfer station shall cease.
14. The waste disposal site shall be operated in accordance with the Operations and Closure Plan contained in the report entitled, Hydrogeological, Operations/Closure and Impact Analysis and Mitigative Measures Report - Township of Faraday Waste Disposal Site, dated May 1992 which is listed in Schedule A as item 9; the Addendum to the Hydrogeological, Operations/Closure and Impact Analysis Mitigative Measures Report - Township of Faraday Waste Disposal Site, dated December 1992 which is listed in Schedule A as item 10; the supplemental sheet dated March 1993 which were prepared for the preceding two documents and which are listed in Schedule A as item 11; the report entitled, Faraday Landfill Site Leachate Collection and Storage System (LCSS) Operating, Monitoring and Maintenance Plan prepared by Gartner Lee Ltd. and dated March 1993 which is listed in Schedule A as item 12; and the information package prepared by Water and Earth Science Associates dated March 16, 1993, which includes:
 - a) a letter from Water and Earth Science Associates to Mr. Ted Reeves which is dated March 15, 1993;
 - b) site life estimate and sewage sludge evaluation, and
 - c) Figure No. 9 entitled Site Development Plan and dated February 24, 1993, which is listed in Schedule A as item 4.
15. The Township shall submit, in the annual report noted in condition 5, annual site contours complete with calculations and an estimate of the remaining site capacity. The methodology used to obtain the site contours and the method of calculating the

remaining site capacity shall receive prior approval from the Director. Subsequent to the annual report for 1993 the frequency of the reporting of annual contours may, in consultation with the Director, be reduced to every three years until seven years' site capacity remains after which annual site contours will be performed every year.

16. The burning of selected wastes at the landfill shall be carried out in strict compliance with the Ministry of the Environment document Guidelines for Burning at Landfills in Ontario (November, 1981).
17. This waste disposal site shall be used for the disposal of dewatered digested sewage sludge from the Bancroft Water Pollution Control Plant on a contingency basis and not as an ongoing solution to the management of the digested sewage sludge.
18. The Leachate Collection and Storage System, as indicated in Schedule A item 13 shall be constructed and in full operation not later than December 31, 1994.
19. Enclosed structures on the landfill site which at times are occupied by people shall be fitted with a methane detection and alarm system with active venting or provided with an effective passive venting system.
20. A groundwater monitoring location will be established in the ravine at the southern property boundary within six months of the date of issuance of this Provisional Certificate of Approval. The monitor shall be incorporated into the site's monitoring program.
21. A groundwater monitoring location will be established at the western property boundary near Derry Lake within six months of the date of issuance of this Provisional Certificate of Approval. The monitors shall be incorporated into the site's monitoring program. Design details of the monitoring location will be conducted in consultation with the Director.
22. The Township and the Village shall make all reasonable efforts to direct household hazardous waste from the landfill site.
23. The Township and the Village shall make all reasonable efforts to continue to seek methods of maximizing the diversion of recyclable and compactable waste from the landfill and to make their best efforts to reach the provincial targets for reduction as soon as possible.

Schedule A

(This Schedule A will form part of the Provisional Certificate of Approval No. A 361504.)

LIST OF DOCUMENTS

1. Application from the Township of Faraday for a Certificate of Approval for a Waste Disposal Site dated September 17, 1992, and signed by Mr. Carl Tinney.
2. Letter from the Township of Faraday to Mr. W. Ng, Ministry of the Environment and Energy dated March 22, 1993 and signed by Ms. E. Mackey.
3. Letter from Mr. Wilfred Ng of the Ministry of the Environment to Mrs. Elizabeth Mackey of the Township of Faraday, dated December 23, 1992.
4. The package prepared by Water and Earth Science Associates Ltd. dated March 16, 1993, which includes:
 - a) a letter from Water and Earth Science Associates to Mr. Ted Reeves which is dated March 15, 1993;
 - b) site life estimates and sewage sludge evaluation, and
 - c) Figure No. 9 entitled Site Development Plan and dated February 24, 1993.
5. Document entitled "Contingency Plan Township of Faraday Landfill Site" prepared by Water and Earth Science Associates Ltd. dated March 1993.
6. Report entitled "Application for a Certificate of Approval for a Waste Disposal (Transfer) Site - Township of Faraday Waste Disposal Site" which was prepared by Water and Earth Science Associates Ltd. and dated August 1991.
7. Application for a Certificate of Approval for a Waste Disposal Site (Transfer) which is signed by Mrs. E. Mackey representing Faraday Township and dated August 22, 1992.
8. Letter from Faraday Township to Mr. J. Tooley of the Ministry of the Environment which is signed by Mrs. E. Mackey and dated September 23, 1991.
9. The report entitled "Hydrogeological, Operations/Closure and Impact Analysis and Mitigative Measures Report, Township of Faraday Waste Disposal Site" dated May 1992 and prepared by Water and Earth Science Associates Ltd.
10. The addendum report entitled "Addendum to the Hydrogeological, Operation/Closure and Impact Analysis and Mitigative Measures Report, Township of Faraday Waste Disposal Site" dated December 1992 and prepared by Water and

Earth Science Associates Ltd.

11. The supplemental sheet prepared for the reports listed in items 9 and 10 above dated March 1993 and prepared by Water and Earth Science Associates Ltd.
12. Report entitled, "Leachate Collection and Storage System (LCSS) Operating, Monitoring and Maintenance Plan" prepared by Gartner Lee Limited and dated March 1993.
13. Contract Documents entitled "Township of Faraday, Contract for Faraday Landfill Site Upper Pond Leachate Collection/Storage, Phase 2, Bancroft, Ontario" prepared by Gartner Lee Limited and Braun Consulting Engineers Limited, June 1992.
14. Report entitled, "Faraday Landfill Site, Leachate Migration Abatement Plan", prepared by Gartner Lee Limited, dated November 1990.

REASONS FOR CONDITIONS

The reasons for the imposition of these conditions are as follows:

1. The reason for condition 1 is to simplify the wording of the subsequent conditions and define the specific meaning of terms as used in this certificate.
2. The reason for condition 2 is to clarify that this certificate sets out all of the requirements imposed with respect to this site other than requirements imposed by legislation and common law.
3. The reason for condition 3 requiring registration of the certificate is that Section 46 of the EPA (R.S.O. 1990 Chapter E-19), prohibited any use made of the lands after they cease to be used for waste disposal purposes within a period of 25 years from the year in which such land ceased to be used unless the approval of the Minister for the proposed use has been given. The purposes of this prohibition is to protect future occupants of the site and the environment from any hazards which might occur as a result of waste being disposed of on the site. This prohibition and potential hazard should be drawn to the attention of future owners and occupants by the certificate being registered on title.
4. The reason for condition 4 is to outline the restrictions imposed on landfilling activities at the site by this Provisional Certificate of Approval.
5. The reason for the annual monitoring report required by condition 5 is to assure this Ministry that the site operator has a good understanding of the impact of ongoing

operations on the environment and that all necessary mitigating measures are being taken.

6. The reason for the site monitoring program required by condition 6 is to ensure that the site is operated as designed and that contaminants do not find access to the natural environment and result in a hazard to the health or safety of any person.
7. The reason for condition 7 is to ensure that the Ministry's Reasonable Use Guideline, which is applicable at the property boundary, can be used by specifying the location of wells and monitoring of wells at the property boundary. Also the Reasonable Use Guidelines or similar water quality criteria are used within in the property boundary to quantitatively trigger the submission of a detailed contingency plan. At the property boundary the Reasonable Use Guidelines are used as quantitative trigger values for the implementation of a detailed contingency plan to remediate the uncontrolled migration of leachate away from the site. To not remediate the uncontrolled migration of leachate beyond the property boundary could result in a hazard to the health and safety of any person and allow leachate access to the natural environment.
8. The reason for condition 8 is to ensure that the suspended sediment resulting from the accelerated rate of erosion which occurs during the soil disturbance associated with construction activities does not find access to the natural environment.
9. The reason for condition 9 is to ensure that the leachate is transported and treated in an orderly manner and not in a manner that would be a danger to the natural environment.
10. The reason for condition 10 is to ensure that the transfer station is operated in accordance with the application for this Provisional Certificate of Approval and supporting information and not on a basis which the Director has not been asked to consider.
11. The reason for condition 11 is to ensure that the transfer station is operated in accordance with the application for the Provisional Certificate of Approval and supporting information and not on a basis which the Director has not been asked to consider.
12. The reason for condition 12 is to ensure that the Municipal Waste Recycle Process is conducted in an organized manner by adequately trained persons, in order to prevent environmental detriment; to provide Faraday Township, the Village of Bancroft, and the Ministry of the Environment and Energy with an assessment of the Municipal Waste Recycle Process; and to ensure that wastes are disposed of in an appropriate manner.

13. The reason for condition 13 is to ensure that the operation of the transfer station only occurs while this certificate of approval, as amended from time to time, is enforced.
14. The reason for condition 14 is to ensure the orderly development and operation of the waste disposal site.
15. The reason for condition 15 is to ensure that the Township, the Village, and the Director are made aware, in a consistent and acceptable manner, of the rate of filling of the site and the remaining capacity of the site.
16. The reason for condition 16 is to prevent adverse, off-site impacts of burning of selected wastes and to protect the health and safety of individuals at the site.
17. The reason for condition 17 is to ensure that a comprehensive program for appropriate management of the digested sewage sludge is developed and implemented and to ensure that sewage sludge is not disposed of at the site on a non-contingency basis which may represent a danger to the health and safety of any individual.
18. The reason for condition 18 is to eliminate the uncontrolled migration of leachate away from the disposal area and to allow the leachate to be managed in an environmentally safe manner.
19. The reason for condition 19 is that detection of a mixture of air and methane prior to concentrations rising to the lower explosive limit or the prevention of its accumulation in an enclosed structure is necessary to ensure that the operation of this site does not create a hazard to the health and safety of any person.
20. The reason for conditions 20 and 21 is to ensure that the Ministry's Reasonable Use Guideline, which is applicable at the property boundary, can be applied to water quality values collected from monitoring wells located at the property boundary. If reasonable use is exceeded for the duration specified in the contingency plan then contingency measures will be implemented to remediate the uncontrolled migration of leachate away from the site.

CONTINGENCY PLAN

TOWNSHIP OF FARADAY LANDFILL SITE

(Prepared by Water and Earth Science Associates Ltd.)

SOUTH BOUNDARY PROPERTY

A detailed contingency plan shall be submitted to the Director within 6 months if the requirements listed below are exceeded in the area of the South Pond. The schedule of implementation for the contingency plan shall be determined by the Director.

1. Hydraulic data from the vicinity of the South Pond indicate that groundwater is flowing from the operating area into the ravine south of the South Pond; and
2. Reasonable Use Guidelines, where the COD value is determined in consultation with the Director, as calculated from data collected from background wells selected in consultation with the Director will be compared to chloride, specific conductivity (as determined from total dissolved solids values), alkalinity (upper limit), chemical oxygen demand, nitrate, iron, and manganese at the following locations:

TW34-1, TW34-2, TW35-1, TW35-2, TW36-1, TW38-1, TW38-2;

TW37-1 and TW37-2 may also be included based on the hydraulic data and in consultation with the Director.

Five exceedances of Reasonable Use Guidelines for any of the above parameters which occur at TW35-1 and TW35-2 and at any other of the above monitoring locations for 3 sampling periods out of 4 will trigger the submission of the contingency plan. If the above condition arises, a confirmatory set of samples will be collected immediately after receiving the results of the most recent sampling period. These confirmatory samples will only be analyzed for the trigger parameters;

OR

If Reasonable Use Guidelines are exceeded for 3 parameters at the property boundary for 3 sampling periods out of 4, then this will trigger the submission of a detailed contingency plan if the requirements outlined in item 2 have not already been triggered.

If the above condition arises, a confirmatory set of samples will be collected immediately after receiving the results of the most recent sampling period. These confirmatory samples will be sampled for the identical set of parameters included in the most recent sampling period.

The detailed contingency plan will provide details on the leachate control system, how this system will prevent leachate migration, and recommendations for the time frame in which it will be implemented.

WEST PROPERTY BOUNDARY

A detailed contingency plan shall be submitted to the Director within 6 months if the requirements listed below are exceeded in the area of the western property boundary at Derry Lake. The schedule of implementation for the contingency plan shall be determined by the Director.

- I. Reasonable Use Guidelines, as calculated from background wells selected in consultation with the Director, will be compared to chloride, specific conductivity (as determined from total dissolved solids values), alkalinity (upper limit), chemical oxygen demand (as determined in consultation with the Director), nitrate, iron, and manganese at the following locations:

TW43, TW44-1, TW44-2

Five exceedances of Reasonable Use Guidelines for any of the above parameters that occur at TW44-1 or TW44-2 or both for 3 sampling periods out of 4 will trigger the submission of the contingency plan. If the above condition arises, a confirmatory set of samples will be collected immediately after receiving the results of the most recent sampling period. These confirmatory samples will only be analyzed for the trigger parameters;

OR

- II. If Reasonable Use Guidelines are exceeded for 3 parameters at the property boundary (new Derry Lake monitors) for 3 sampling periods out of 4, then this will trigger the submission of a detailed contingency plan if the requirements outlined in item "I" have not already been triggered. If the above condition arises, a confirmatory set of samples will be collected immediately after receiving the results of the most recent sampling period. These confirmatory samples will be sampled for the identical set of parameters included in the most recent sampling period.

The detailed contingency plan will provide details on the leachate control systems, how this system will prevent leachate migration, and recommendations for the time frame in which it will be implemented.

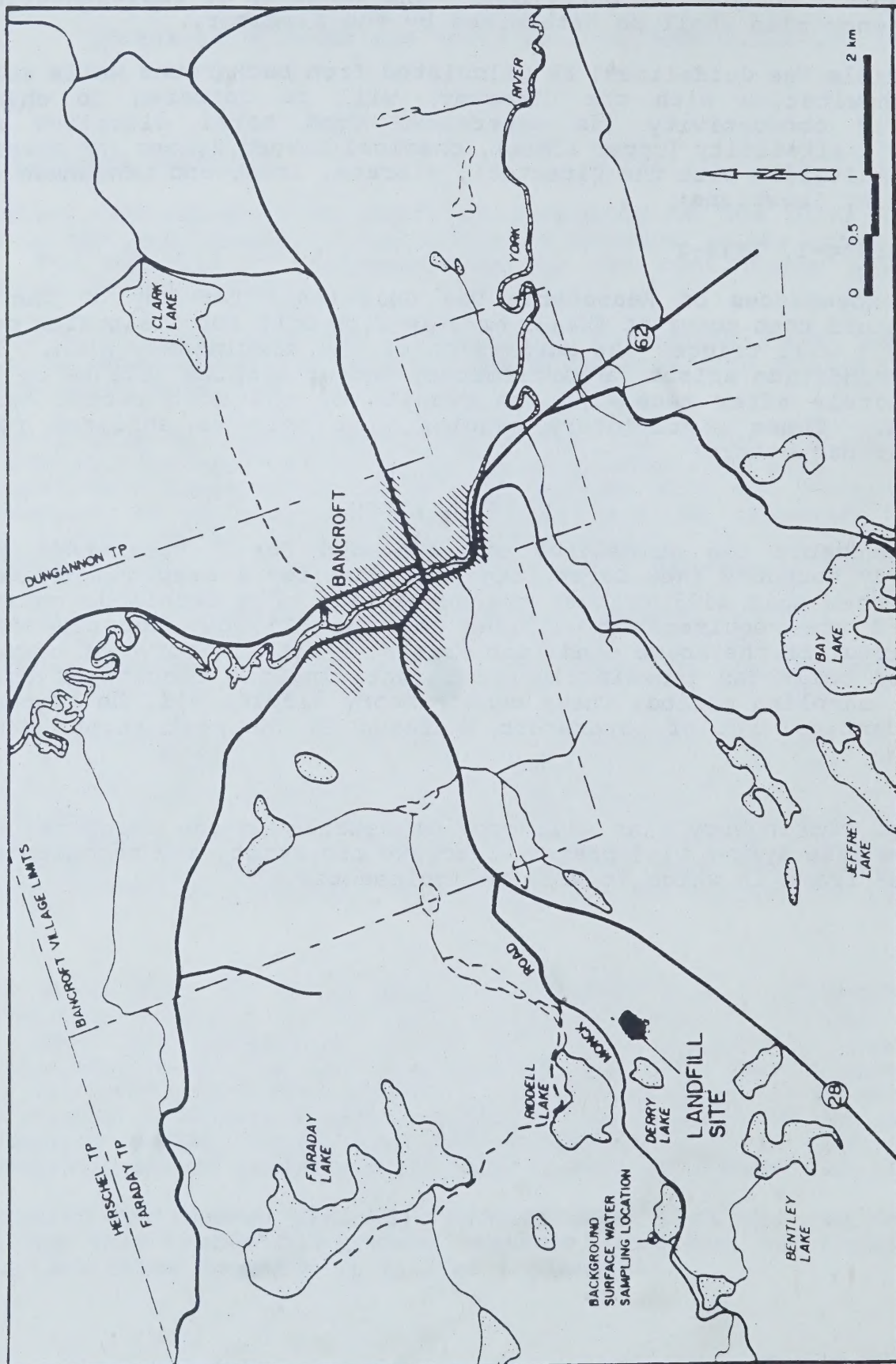


FIGURE 1
LOCATION MAP
TOWNSHIP OF FARADAY LANDFILL SITE

Appendix IV

TOWNSHIP OF FARADAY LANDFILL

Exhibit List

	Document	Date Filed	By
1	Referral by Director - 10.7.92	Nov. 2/92	Board
2	Application by Township of Faraday - 21.5.92	Nov. 2/92	Board
3	Order Appointing Panel - 16.10.92	Nov. 2/92	Board
4	Affidavit of Service - Elizabeth Mackey - 30.10.92	Nov. 2/92	Proponent
5	Order - EAA Exemption - 22.4.87	Nov. 2/92	Board
6	Site Investigation - Ian Wilson & Associates - 30.8.84	Nov. 2/92	Proponent
7(a)	Operation Report by Ainley & Associates - Feb/86	Nov. 2/92	Proponent
7(b)	Large Report Maps	Nov. 2/92	Proponent
8	South Pond Investigation - WESA - Sept. 4/90	Nov. 2/92	Proponent
9	Leachate Migration Abatement Plan - Nov. 9 - Gartner Lee	Nov. 2/92	Proponent
10A	Hydrogeological Operations/Closure & Impact Analysis & Mitigative Measures Report - WESA - May/92	Nov. 2/92	Proponent
10B	Appendices A-H (WESA) - April/92	Nov. 2/92	Proponent
11	Tender Documents for Upper Pond Leachate Collection/Storage System - Phase 2 - Braun Consulting Engineers - June/92	Nov. 2/92	Proponent
12	Contract Documents for Upper Pond Leachate Collection/Storage System - Oct/91	Nov. 2/92	Proponent
13	Affidavit of Township Clerk re: evening session (notice) 29.3.93	Mar. 29/93	Proponent
14	Witness Statements of N. Carney, E. Mackey, D. Paterson	Mar. 29/93	Proponent

15	Witness Statement of Ian MacDonald & Byron O'Connor	Mar. 29/93	Proponent
16	Witness Statement of Mark Sungaila	Mar. 29/92	Proponent
17	Addendum to Hydrogeological Operation/Closure Report - WESA - Dec./92	Mar. 29/93	Proponent
18	Package Contents (3 documents from WESA) - 16.3.93	Mar. 29/93	Proponent
19	Statement of Agreed Facts and Opinions - 4.3.93	Mar. 29/93	Proponent
20	Witness Statement - John Wayne Tooley	Mar. 29/93	Director
21	Witness Statement - Ted C. Reeves	Mar. 29/93	Director
22	Witness Statement - Robert Bruce	Mar. 29/93	Director
23	Map of County of Hastings - undated	Mar. 29/93	Proponent
24	Part of Base Map of Township - 1992	Mar. 29/93	Proponent
25	Figure 2, "Site Plan" - blow up from Exhibit 10A - rev'd March 18/93	Mar. 29/93	Proponent
26	Excerpts of correspondence from Township files	Mar. 29/93	Proponent
27	F1 - Location Map - Oct. 27/92	Mar. 29/93	Proponent
28	Geological Cross Section - from Derry Lake through Operating Area - March 18/93	Mar. 29/93	Proponent
29	F9 - Site Development Plan - March 18/93	Mar. 29/93	Proponent
30	F10 - Final Contours Plan & Closure - March 18/93	Mar. 29/93	Proponent
31	Groundwater Elevation (5 months, 16 months, 21 months)	Mar. 30/93	Proponent
32	Comparison of Geochemical Data with Reasonable Use Guidelines	Mar. 30/92	Proponent
33	Amended Operating, Monitoring & Maintenance Plan for Leachate Collection & Storage System	Mar. 30/93	Proponent
34	F1 - General Layout Plan of LCSS - Feb./93	Mar. 30/93	Proponent

35	Drawing 2E - Plan & Profile Manhole A-F - August/91	Mar. 30/93	Proponent
36	Drawing 3E - Plan & Profile Manhole G-B - August/91	Mar. 30/93	Proponent
37	Cross-section through Manhole B - March/93	Mar. 30/93	Proponent
38	Double Liner Concept - March/93	Mar. 30/93	Proponent
39	Proposed Conditions of Approval - March 31/93	Mar. 31/93	Proponent
40	Proposed Contingency Plan - March 31/93	Mar. 31/93	Proponent
41	Supplemental to May/92 Report & Addendum to that Report (Exhibits 10A & 10B) - March 26/93	Mar. 31/93	Proponent
42	Correspondence from Township files relating to funding issues	Mar. 31/93	Proponent
43	Summary of Capital Debt Forecast & Commitments - Village of Bancroft - March/93	Mar. 31/93	Proponent
44	Summary of Capital Debt Forecast & Commitments - Township of Faraday - March/93	Mar. 31/93	Proponent

Appendix V

TOWNSHIP OF FARADAY LANDFILL

Witness List

No.	Name	Firm	Field	Party
1	Niall Carney	Hastings County	Planner	Proponent
2	Elizabeth Mackey	Clerk - Faraday	Clerk	Proponent
3	Dean Paterson	Clerk - Bancroft	Clerk	Proponent
4	Ian MacDonald	WESA	Hydrogeologist	Proponent
5	Byron O'Connor	WESA	Hydrogeologist	Proponent
6	Mark Sungaila	Gartner Lee	Geochemical Engineer	Proponent
7	Paul Murray	Gartner Lee	Environmental Engineer	Proponent

CAZONEA 93E03

Ontario, Environmental Assessment Board.
EP-92-03

TOWNSHIP OF PARADAY LANDFILL. DECISION AND REASON
DECISION... 1993.

**RESOURCE CENTRE
INST. FOR ENVIRON'L. STUDIES
UNIVERSITY OF TORONTO**



